(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

CORRECTED VERSION

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
8 February 2001 (08.02.2001)

PCT

(10) International Publication Number
WO 01/09968 A1

(51) International Patent Classification[7]: H01M 8/00

(21) International Application Number: PCT/US00/20889

(22) International Filing Date: 28 July 2000 (28.07.2000)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
60/146,769 31 July 1999 (31.07.1999) US
09/626,629 27 July 2000 (27.07.2000) US

(71) Applicant *(for all designated States except US)*: **THE REGENTS OF THE UNIVERSITY OF CALIFORNIA** [US/US]; One Cyclotron Road, Berkeley, CA 94720 (US).

(72) Inventors; and

(75) Inventors/Applicants *(for US only)*: **VISCO, Steven, J.** [US/US]; 546 Arlington Avenue, Berkeley, CA 94720 (US). **JACOBSON, Craig, P.** [US/US]; 3434 Santa Clara Avenue, El Cerrito, CA 94530 (US). **DEJONGHE, Lutgard, C.** [BE/US]; 910 Acalanes Road, Lafayette, CA 94549 (US).

(74) Agent: **AUSTIN, James, E.**; Beyer Weaver & Thomas, LLP, P.O. Box 130, Mountain View, CA 94042-0130 (US).

(81) Designated States *(national)*: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW.

(84) Designated States *(regional)*: ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).

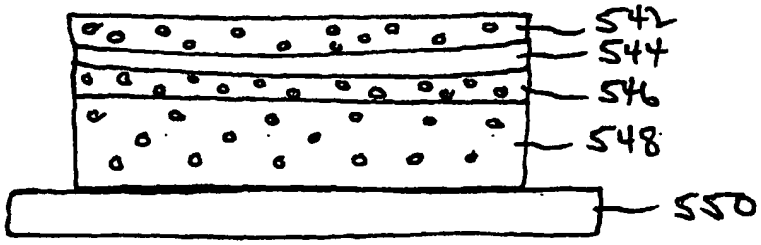
Published:
— *with international search report*

(48) Date of publication of this corrected version:
2 August 2001

(15) Information about Correction:
see PCT Gazette No. 31/2001 of 2 August 2001, Section II

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: STRUCTURES AND FABRICATION TECHNIQUES FOR SOLID STATE ELECTROCHEMICAL DEVICES



(57) Abstract: Provided are low-cost, mechanically strong, highly electronically conductive porous substrates and associated structures for solid-state electrochemical devices, techniques for forming these structures, and devices incorporating the structures. The invention provides solid state electrochemical device substrates (548) of novel composition and techniques for forming thin electrode/membrane/electrolyte coatings (546/544) on the novel or more conventional substrates. In particular, in one embodiment the invention provides techniques for co-firing of device substrate (548) (often an electrode) with an electrolyte or membrane layer (544) to form densified electrolyte/membrane films 5 to 20 microns thick. In another embodiment, densified electrolyte/membrane films 5 to 20 microns thick may be formed on a pre-sintered substrate by a constrained sintering process. In some cases, the substrate (548) may be a porous metal, alloy, or non-nickel cermet incorporating one or more of the transition metals Cr, Fe, Cu and Ag, or alloys thereof.

WO 01/09968 A1